

*a* <sup>Inventor</sup> *Cigarette*  
*a* Background of the Invention

The invention is based on the problem of avoiding spotting on the wrappers of  
 5 cigarettes.

The buyers of cigarettes consider the spotless white appearance of a cigarette as an indication of quality. Even if this opinion is not particularly correct – in hot, humid climates cigarettes can show discoloration even after a short period of storage, which  
 10 does not affect the smoke flavour – manufacturers have to focus upon market expectations.

Spotting of cigarette paper can be explained in that dissolved substances contained in the tobacco can penetrate the paper at the points of contact between the paper and the  
 15 tobacco particles, as said paper is both porous and hydrophilic.

It would be conceivable to reduce spotting on cigarette paper in that said paper is coated with any substances that would make the paper completely impervious. Such coatings have been proposed in order to effect rapid extinguishing of discarded  
 20 cigarettes. In order to be able to control the content of different substances contained in the smoke, however, the cigarette manufacturer is generally interested in a certain degree of air permeability of the cigarette paper. The problem is consequently to, on the one hand, keep the paper permeable for air, and on the other hand to reduce the permeability for dissolved cigarette ingredients.

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For solving the problem, US-A 5,143 099 proposed to form the cigarette wrapper using two layers of paper, wherein the inner wrapper is provided with a very high degree of permeability, so that the overall permeability remains sufficient. In this context, the possibility of making the inner wrapper water repellent by adding 0.5%  
 30 alkyl ketene dimer was mentioned.

*a* Summary of the Invention

In comparison with the prior art described, the object of the invention is to make the

use of two layers of paper superfluous, this being by means of an impregnating agent that is harmless and changes the smoke flavour as little as possible.

It was unexpected that providing the cigarette with a wrapper that comprises a layer of paper with water repellent impregnation made from a cellulose derivative, in particular of ethyl cellulose, would lead to a solution of the object. EP 0 419 981 does describe such a cigarette, in which, however, the air permeability is below 5 Coresta units.

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### Detailed Description of Invention

The invention is based on the recognition that the impregnation can be sufficiently thin to retain the desired air permeability, if it is applied in several layers. It is thus provided according to the invention that the cellulose derivative is applied in several layers in order to obtain an air permeability in the wrapper of at least 20, preferably 50 Coresta units.

Different cellulose derivatives per se satisfy the physical criteria required with respect to air permeability and water permeability in the impregnated paper, for example, sufficiently highly derived cellulose ether and cellulose ester (for example, nitrocellulose). Ethyl cellulose is preferred, however, as it is harmless – it complies with the German regulations – and makes practically no change to the smoke flavour.

Further details of the invention will be discussed hereinafter with reference to comparative tests.

Cigarette papers with a substance of  $26\text{g/m}^2$  were coated, in a gravure process by means of a coating roller, with cellulose azetopropionate (CAP) or with cellulose azetobutyrate (CAB) or with ethyl cellulose (EC). The amount applied was approximately  $0.7\text{ g/m}^2$ . Cigarettes were manufactured with the cigarette paper manufactured in this way.

In order to test their spotting tendency, the cigarettes were stored packaged and unpackaged at either  $20^\circ\text{C}$  and 60% relative humidity or  $30^\circ\text{C}$  and 80% relative

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Coating with 0.7 g EC	572 points
Coating with 0.7 g CAP	223 points
Coating with 0.7 g CAB	77 points

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